



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,384	11/26/2003	Mark M. Leather	00100.01.0025	9662
29153 7590 04/10/2007 ADVANCED MICRO DEVICES, INC. C/O VEDDER PRICE KAUFMAN & KAMMHOLZ, P.C. 222 N.LASALLE STREET CHICAGO, IL 60601			EXAMINER LAY, MICHELLE K	
			ART UNIT 2628	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/724,384

Applicant(s)

LEATHER ET AL.

Examiner

Michelle K. Lay

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "316" on pg. 9 line 11 and "116" in Fig. 3 have both been used to designate *geometry*. Reference characters "360" on pg. 9 line 17 and "160" in Fig. 3 have both been used to designate *display device*. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 2, 6, 10, and 18 are objected to because of the following informalities: "paralell" is misspelled in claims 2, 10, and 18. "Furhter" is misspelled in claim 6. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims **1-4, 9-12, and 17-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Bowen et al. (6,292,200 B1).

In regards to claims **1, 9, and 17**, Bowen teaches a method/system having a hyperpipe architecture for utilizing multiple rendering pipes for the generation of a single 3-D display [col. 3 lines 47-49]. Said **front-end** comprises an application program running on host processor (H) (301) [Fig. 3] directing the rendering process. The application program provides the high-level instructions and data to be used in the rendering process. The information is passed on to a geometry engine (G) (302), which performs the arithmetic operations on vertices. Said **back-end** comprises multiple pipes merged together to help in rendering a single frame, thereby allowing parallel processing of complex images [col. 5 lines 41-43]. The appropriate pixel values are read from frame buffer (305) by display block (D) (304) and put out onto the hyperpipe bus or drawn out for display onto a CRT screen [col. 6 lines 5-8].

In regards to claims **2, 10, and 18**, Bowen teaches a hyperpipe router (201) [Fig. 2], which determines which packet is intend for which pipe. The packed is then routed to a

Art Unit: 2628

local router (202) that directs the packet to the appropriate circuit within pipe (e.g., the rasterizer) [col. 5 lines 46-60].

In regards to claims **3**, **11**, and **19**, Bowen teaches, with reference to Fig. 5, a rendering pipe may be instructed to contribute in the rendering of a portion of a frame. The portion of the frame is specified according to an XY coordinate system. Registers (504) and (505) store the results from the rendering pipes (Pipes 0, 1). Data is then merged and passed to an output device. Note that the frame can have separate sections rendered by different rendering pipes. As an example, for a two rendering pipe system, the display surface (512) is subdivided into four sections. Pipe 0 renders two sections, and pipe 1 renders two sections [col. 6 lines 35-59].

In regards to claims **4**, **12**, and **20**, the method/system of Bowen adds FIFO buffers to temporarily hold the data because, due to the variable latencies, it is not known exactly when the data might be received [col. 4 lines 57-61; col. 5 lines 32-33].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **5-8, 13-16, and 21-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowen et al. (6,292,200 B1).

Bowen teaches the limitations of claims 5-8, 13-16, and 21-24, with the exception of explicitly disclosing specified units to perform functions. However, in regards to claims **5, 13, and 21**, the pipes of Bowen include rasterizer (303) that performs color, blending, anti-aliasing, **scan-conversion**, depth, **texture**, **lighting**, and fog functions [col. 6 lines 2-4; Fig. 3]. Although the pipes do not explicitly comprise a separate scan converter, rasterizer, unified shader, and a texture unit as claimed, rasterizer (303) performs all the functions of these units.

In regards to claims **6, 14, and 22**, the pipes of Bowen include rasterizer (303) that performs **color**, blending, anti-aliasing, scan-conversion, **depth**, texture, lighting, and fog functions [col. 6 lines 2-4; Fig. 3]. Although the pipes do not explicitly comprise a separate z- and color-buffer as claimed, rasterizer (303) comprises depth and color functions, which implicitly requires such buffers.

Art Unit: 2628

In regards to claims **7, 8, 15, 16, 23, and 24**, the rasterizer (303) of Bowen performs color, blending, anti-aliasing, scan-conversion, depth, texture, lighting, and fog functions [col. 6 lines 2-4; Fig. 3]. Bowen further teaches utilizing multiple rendering pipes for the generation of a single 3-D display [col. 3 lines 47-49]. It would have been obvious to one of ordinary skill in the art that the implicit z-buffer within the rasterizer (303) needed to perform depth functions would function with the shader and the scan converter in order to generate a single 3-D display. Furthermore, the "early" and "late" z-interface is within the same z-buffer, Thus the "early" and "late" z-interface is dependent and defined on the step process that the generation occurs.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Baldwin (6,791,559 B2)

Zhu (6,697,063)

Zhu (7,170,515 B1)

Furtner (6,778,177 B1)

Blythe et al. (2002/0145612 A1)

Kent (2003/0164830 A1)

Akeley et al. ("High-Performance Polygon Rendering")

Art Unit: 2628

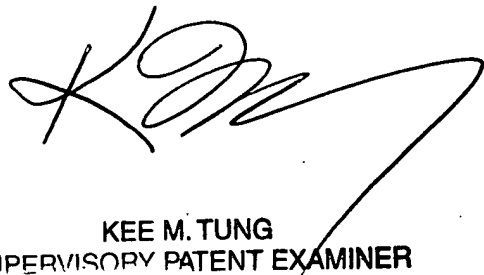
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday-Friday 7:30a-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee M. Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michelle K. Lay
Patent Examiner
Division 2628
04.04.2007 mkl

Michelle K. Lay
Patent Examiner



KEE M. TUNG
SUPERVISORY PATENT EXAMINER